SIGNIFICANT PERMIT REVISION DESCRIPTION

This significant permit revision for Freeport - McMoRan Safford Inc. authorizes the company to install and operate a 1,350 ton per day sulfuric acid plant. New equipment includes the acid plant, a 5.23 MMBtu/hr propane start up boiler, a 68.4 MMBtu/hr propane pre heater, and a 28,500 gallon per minute cooling tower.

The new equipment will result in an increase in the potential emissions of carbon monoxide (CO), particulate matter with a diameter less than 10 microns (PM_{10}), particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO_2), volatile organic compounds (VOCs) and sulfuric acid mist (H_2SO_4).

The potential emissions from the acid plant and the entire facility are summarized below in Table 1.

Table 1: Net Potential Emissions Resulting from Significant Revision and new PTE of Entire Facility

Pollutant	PTE of Revision (tpy)	PTE of Entire Facility Prior to Revision (tpy)	New PTE of Entire Facility (tpy)
CO	1.17	5.12	6.29
NO_x	44.6	38.4	83.0
SO_2	48.5	.630	49.1
VOCs	.024	1.40	1.42
PM	4.67	64.0	68.7
PM_{10}	4.67	64.0	68.7
H_2SO_4	8.98	0	8.98

In addition, the Arizona Department of Environmental Quality (ADEQ) has determined that the New Source Performance Standards for Metallic Mineral Processing Plants (NSPS Subpart LL) apply to some of the equipment at the facility and the permit is being revised to reflect this determination. These changes are incorporated in Attachment “B” Section III.

The above changes meet all the requirements for a significant permit revision as listed in A.A.C. R 18-2-320.

ATTACHMENT "B": SPECIFIC CONDITIONS
Addenda (Significant Revision #46747) to Operating Permit #38109 for Freeport - McMoRan Safford Inc.

The following conditions shall be amended or replaced in the requirements set forth in Attachment "B" of Operating Permit #38109.

Condition II.A in Attachment “B” shall be amended to contain the following condition:

7. The Permittee shall not emit gaseous or odorous materials from equipment, operations or premises under their control in such quantities or concentrations as to cause air pollution.
[A.A.C. R18-2-730.D]

Condition III in Attachment "B" shall be replaced as follows:

III. METALLIC MINERAL PROCESSING EQUIPMENT

A. Metallic Mineral Processing Equipment Subject to NSPS Subpart LL

1. Applicability

   This Section applies to the metallic mineral processing equipment which is identified in Attachment "C" as subject to NSPS 40 CFR 60 Subpart LL.

2. Particulate Matter and Opacity

   a. Emission Limitations/Standards

      (1) *The Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emissions that contain particulate matter in excess of 0.05 grams per dry standard cubic meter (0.022 grains per dry standard cubic foot).*
      [40 CFR 60.382(a)(1) and A.A.C.18-2-331.A.3.a]
      [Material permit conditions are indicated by underline and italics]

      (2) *The Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emissions that exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing emission control device.*
      [40 CFR 60.382(a)(2) and A.A.C.18-2-331.A.3.f]
      [Material permit conditions are indicated by underline and italics]

      (3) *The Permittee shall not cause to be discharged into the atmosphere from any affected facility any process fugitive emissions that exhibit greater than 10 percent opacity.*
      [40 CFR 60.382(b) and A.A.C.18-2-331.A.3.f]
      [Material permit conditions are indicated by underline and italics]

      (4) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2110-BAG 001 any gases which contain particulate matter or PM_{10} in excess of 1.71 lb/hr*.
      [A.A.C. R18-2-306.01 and -331.A.3.a]
      [Material Permit Conditions are indicated by underline and italics]

      (5) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2210-BAG 001 any gases which contain particulate matter or PM_{10} in excess of 1.44 lb/hr*.
      [A.A.C. R18-2-306.01 and -331.A.3.a]
      [Material Permit Conditions are indicated by underline and italics]

(6) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2210-BAG 002 any gases which contain particulate matter or PM_{10} in excess of 4.94 lb/hr*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

(7) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2210-BAG 003 any gases which contain particulate matter or PM_{10} in excess of 3.22 lb/hr*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

(8) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2210-BAG 004 any gases which contain particulate matter or PM_{10} in excess of 0.96 lb/hr*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

(9) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2280-BAG 001 any gases which contain particulate matter or PM_{10} in excess of 0.41 lb/hr*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

(10) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2310-BAG 001 any gases which contain particulate matter or PM_{10} in excess of 1.37 lb/hr*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

(11) *The Permittee shall not cause or allow to be emitted into the atmosphere from Baghouse 2310-BAG 002 any gases which contain particulate matter or PM_{10} in excess of 0.41 lb/hr*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

b. Air Pollution Control Equipment

(1) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2110-BAG-001 to control particulate matter emissions from Vibrating Grizzly Feeder 2110-GRI 003, Jaw Crusher 2110-CRJ 001, and all material transfers in the primary crushing circuit*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(2) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2210-BAG-001 to control particulate matter emissions from Secondary Crushers 2210-CRU 001 and*

002, and all material transfers in the secondary crushing circuit.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(3) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2210-BAG-002 to control particulate matter emissions from Tertiary Screens 2270-SCN 001, 002, 003 and 004, Tertiary Crushers 2270-CRU 001, 002, 003 and 004, and all material transfers in the tertiary crushing and screening circuit*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(4) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2210-BAG-003 to control particulate matter emissions from Secondary Screens 2230-SCN 001 and 002, and all material transfers in the secondary screening circuit*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(5) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2210-BAG-004 to control particulate matter emissions from material transfers to Tertiary Crushing Surge Bin 2270-BIN 001 and Secondary Crushing Surge Bin 2210-BIN 001*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(6) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2280-BAG-001 to control particulate matter emissions from material transfers from Fine Ore Product Conveyor 2280-CON 001 to Fine Ore Bin Feed Conveyor 2280-CON 002*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(7) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2310-BAG-001 to control particulate matter emissions from material transfers in the agglomeration circuit*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(8) *The Permittee shall, to the extent practicable, install, operate* and maintain *Baghouse 2310-BAG-002 to control particulate matter emissions from Fine Ore Surge Bin 2310-BIN 001*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(9) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2110-WSS-001 to control particulate matter emissions from Scalping Grizzlies 2110-GRI 001 and 2110-GRI 002*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(10) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2110-WSS-002 to control particulate matter emissions from Dust Collector 2110-BAG 001*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(11) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2130-WSS-001 to control particulate matter emissions from Reclaim Belt Feeders 2130-FDR 001, 002 and 003*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(12) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2210-WSS-003 to control particulate matter emissions from Dust Collector 2210-BAG 003*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(13) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2210-WSS-001 to control particulate matter emissions from Dust Collector 2210-BAG 001*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(14) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2210-WSS-002 to control particulate matter emissions from Dust Collector 2210-BAG 002*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(15) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2280-WSS-001 to control particulate matter emissions from Dust Collector 2280-BAG 001*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

(16) *The Permittee shall, to the extent practicable, install, operate* and maintain *Water Spray 2310-WSS-001 to control particulate matter emissions from Dust Collector 2310-BAG 001 and from Agglomeration Drum Feeders 2310 FDR 001 and 002*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

c. Monitoring, Reporting and Recordkeeping Requirements

(1) Baghouse Stack Opacity

(a) Baseline establishment

The Permittee shall conduct a Method 9 observation to establish a baseline opacity level for each baghouse stack. The Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation. Within 30 days of establishing the baseline opacity, the Permittee shall report the results to the Director.

[A.A.C. R18-2-306.A.3.c and 306.A.5]

(b) Baseline Reestablishment

If necessitated by the results of the bi-weekly (once every two weeks) monitoring, the Permittee may re-establish a baghouse's baseline opacity level by conducting a Method 9 observation. Within 30 days of re-establishing the baseline opacity, the Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline.

[A.A.C. R18-2-306.A.3.c]

(c) Biweekly stack opacity monitoring

(i) A certified Method 9 observer shall conduct a bi-weekly visual survey of emissions from the baghouse stack when the baghouse is in operation. The Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(ii) If the observer sees a plume from the baghouse stack that on an instantaneous basis appears to exceed the baseline opacity level, then the observer shall take a six-minute Method 9 observation of the plume. If visibility or other conditions prevent the observation, then the observer shall document these conditions.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(iii) If the six-minute opacity of the plume is less than the baseline level, the observer shall make a

record of the results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(iv) If the six-minute opacity of the plume exceeds the baseline level but is less than the applicable opacity standard of 7%, the Permittee shall adjust or repair the controls or process equipment as practicable to reduce opacity to the baseline level. The Permittee shall make a record of the results of the Method 9 observation and the corrective action taken.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(v) If the six-minute opacity of the plume exceeds the applicable opacity standard of 7%, the Permittee shall adjust or repair the controls or process equipment as necessary to reduce opacity to below the opacity standard and as practicable to reduce opacity to the baseline level. The Permittee shall report the incident as an excess emission for opacity. The Permittee shall make a record of the results of the Method 9 observation, the corrective action taken, and the excess emissions report.

[A.A.C. R18-2-306.A.3.c, 306.A.4 and 306.A.5]

(2) Process Source Fugitive Emissions

(a) A certified Method 9 observer shall conduct a bi-weekly visual survey of fugitive emissions from all the process sources covered by this Section while they are in operation. The Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(b) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard of 10%, then the observer shall take a six-minute Method 9 observation of the plume. If visibility or other conditions prevent the observation, then the observer shall document these conditions.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(c) If the six-minute opacity of the plume is less than the applicable opacity standard of 10%, then the observer shall make a record of the results of the Method 9

observation.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(d) If the six-minute opacity of the plume exceeds the applicable opacity standard of 10%, the Permittee shall adjust or repair the equipment as necessary to reduce opacity to a level below 10% and report the incident as an excess emission for opacity. The Permittee shall make a record of the results of the Method 9 observation, the corrective action taken, and the excess emissions report.

[A.A.C. R18-2-306.A.3.c, 306.A.4 and 306.A.5]

d. Testing Requirements

(1) The Permittee shall conduct performance tests every two years to show compliance with the particulate matter emission limits in Condition III.A.2.a above.

[A.A.C R18-2-306.A.3.c]

(2) The Permittee shall conduct annual six-minute Method 9 opacity observations on all emission units covered by this Section.

[A.A.C. R18-2-306.A.3.c]

e. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.382(a)(1), 60.382(a)(2), and 60.382(b).

[A.A.C. R18-2-325]

B. Metallic Mineral Processing Equipment Subject to A.A.C. R18-2-721

1. Applicability

This Section applies to the material handling between the primary crusher and the coarse ore stockpile, the lengths of all conveyor belts between the transfer points, the agglomerator, and the final conveyor drop point at any leach pad.

2. Particulate Matter and Opacity

a. Emission Limitations/Standards

(1) The Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in any one hour from any process source subject to the provisions of this Section in total quantities in excess of the amounts calculated by one of the following equations:

(a) For process sources having a process weight rate of 30

tons per hour or less, the maximum allowable emissions shall be determined by the following equation:

$E = 4.10P^{0.67}$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

P = the process weight rate in tons-mass per hour.

[A.A.C. R18-2-721.B.1]

(b) For process sources having a process weight rate greater than 30 tons per hour, the maximum allowable emissions shall be determined by the following equation:

$E = 55.0P^{0.11}-40$

Where E and P are defined as indicated in III.2.a.(1)(a)) above.

[A.A.C. R18-2-721.B.2]

(2) For purposes of this Section, the total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emissions of particulate matter.

[A.A.C. R18-2-721.D]

(3) The opacity of any plume or effluent from any process source subject to the provisions of this Section shall not be greater than 20%.

[A.A.C. R18-2-702.B.3]

(4) If the presence of uncombined water is the only reason for an exceedance of the visible emissions requirements in III.B.2.a.(3) above, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C. R18-2-702.C]

b. Air Pollution Control Equipment

The Permittee shall, to the extent practicable, install, operate and maintain *Water Spray 2110-WSS-003 to control particulate matter emissions from the Primary Crushing Discharge Conveyor*.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]
[Material Permit Conditions are indicated by underline and italics]

c. Monitoring, Reporting and Recordkeeping Requirements

(1) A certified Method 9 observer shall conduct a bi-weekly visual survey of emissions from all the sources covered by this Section while they are in operation. The Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(2) If the observer sees a plume that on an instantaneous basis appears to exceed the applicable opacity standard of 20%, then the observer shall take a six-minute Method 9 observation of the plume. If visibility or other conditions prevent the observation, then the observer shall document these conditions.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(3) If the six-minute opacity of the plume is less than the applicable opacity standard of 20%, then the observer shall make a record of the results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(4) If the six-minute opacity of the plume exceeds the applicable opacity standard of 20%, the Permittee shall adjust or repair equipment as necessary to reduce opacity to a level below 20% and report the incident as an excess emission for opacity. The Permittee shall make a record of the results of the Method 9 observation, the corrective action taken, and the excess emissions report.

[A.A.C. R18-2-306.A.3.c, 306.A.4 and 306.A.5]

d. Testing Requirements

The Permittee shall conduct annual six-minute EPA Method 9 opacity observations on all emission units covered by this Section.

[A.A.C. R18-2-306.A.3.c]

e. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-702.B.3, 702.C, 721.B and 721.D.

[A.A.C. R18-2-325]

Condition V in Attachment “B” shall be replaced as follows:

V. FUEL-BURNING EQUIPMENT

A. Applicability

This Section applies to the electrolyte heaters and the acid plant start-up boiler (B-600).

B. Operating Limitations

1. *The Permittee shall burn only propane in the fuel burning equipment.*

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

2. *The Permittee shall only operate the acid plant propane start-up boiler when the acid plant is shut down or for the purposes of startups, shutdowns, maintenance or testing.*

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

C. Particulate Matter

1. Emission Limitation

The Permittee shall not cause, allow or permit the emission of particulate matter, caused by combustion of fuel, from the fuel burning equipment in excess of the amounts calculated by the following equation:

$E = 1.02Q^{0.769}$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour

Q = the heat input in million Btu per hour.

[A.A.C. R18-2-724.C.1]

2. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C.R18-2-724.C.1.

[A.A.C. R18-2-325]

D. Opacity

1. Emission Limitations

The Permittee shall not cause, allow or permit the opacity of any plume or effluent from the fuel burning equipment to exceed 15 percent.

[A.A.C. R18-2-724.J]

2. Monitoring, Recordkeeping and Reporting Requirements

a. The Permittee shall report all six-minute periods in which the opacity of any plume or effluent from the fuel burning equipment exceeds 15 percent.

[A.A.C. R18-2–724.J]

b. A certified EPA Reference Method 9 observer shall conduct an annual survey of visible emissions emanating from the stacks of the electrolyte heaters and the acid plant propane startup boiler when in operation. If the opacity of the emissions observed appears to exceed the standard, the observer shall conduct a certified EPA Reference Method 9 observation. The Permittee shall keep records of the initial survey and any EPA Reference Method 9 observations performed. These records shall include the emission point observed, location of observer, name of observer, date and time of observation, and the results of the observation. If the observation shows a Method 9 opacity reading in excess of 15%, the Permittee shall report this to ADEQ as excess emission and initiate appropriate corrective action to reduce the opacity below 15%. The Permittee shall keep a record of the corrective action performed.

[A.A.C. R18-2-306.A.3.c, 306.A.4 and 306.A.5]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-724.J.

[A.A.C. R18-2-325]

Condition XIII in Attachment "B" shall be added as follows:

XIII. ACID PLANT

A. Applicability

This Section applies to the sulfuric acid plant.

B. Sulfur Dioxide

1. Emission Limitations and Standards

a. The Permittee shall not cause to be discharged into the atmosphere from the acid plant any gases which contain sulfur dioxide in excess of 4 lb per ton of acid produced, the production being expressed as 100 percent H_2SO_4.

[40 CFR 60.82(a)]

b. *The Permittee shall not cause to be discharged into the atmosphere from the acid plant, sulfur dioxide in excess of 11.05 lbs per hour on a rolling 24-hour averaging period.*

[A.A.C. R18-2-306.01 & 331.A.3.a]

[Material permit conditions are indicated by underline and italics]

2. Air Pollution Control Requirements

The Permittee shall install, operate, and maintain *a caustic scrubber for the control of sulfur dioxide emissions from the acid plant.*

[A.A.C. R18-2-306.01 and 331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

3. Monitoring, Recordkeeping and Reporting Requirements

a. *The Permittee shall install, calibrate*, maintain, *and operate a continuous monitoring system (CEMS) for the measurement of sulfur dioxide*.

[40 CFR 60.84(a), A.A.C. R18-2-331.A.3.c]
[Material permit conditions are indicated by underline and italics]

b. The SO_2 CEMS shall have a span value equal to either 30 ppm or 1.5 times the highest measured value established during the testing required by Condition XIII.B.4.e, whichever is higher.

[A.A.C. R18-2-306.A.3.d]

c. *The Permittee shall install, calibrate*, maintain, *and operate a flow measurement sensor to measure the stack gas volumetric flow rate*.

[A.A.C. R18-2-306.A.3.d and 331.A.3.c]
[Material permit conditions are indicated by underline and italics]

d. The installation of the SO_2 CEMS shall meet the requirements of 40 CFR 60 Appendix B "Performance Specification 2"

[40 CFR 60.13(a)]

e. The SO2 CEMS shall be installed and operational prior to the performance test required in Condition XIII.B.4.a. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device.

[40 CFR 60.13(b)]

f. The installation of the flow measurement sensor shall meet the requirements of 40 CFR 60 Appendix B "Performance Specification 6"

[A.A.C. R18-2-306.A.3.d]

g. Except for system breakdowns, repairs, calibration checks, and zero and span adjustments as required by 40 CFR 60 Appendix F, the SO_2 CEMS shall be in continuous operation whenever the acid plant is operating or shutting down. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

[40 CFR 60.13(e)]

h. Except for system breakdowns, repairs, calibration checks, and zero and span adjustments as required by 40 CFR 60 Appendix F, the flow measurement sensor shall be in continuous operation whenever the acid

plant is operating or shutting down. The flow measurement sensor shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

[A.A.C. R18-2-306.A.3.d]

i. For the SO_2 CEMS the Permittee shall compute 1-hour averages from four or more data points equally spaced over each 1-hour period. Data recorded during periods of continuous system breakdown, repair, calibration checks, and zero and span adjustments shall not be included in the data averages. The data may be recorded in reduced or nonreduced form.

[40 CFR 60.13(h)]

j. For the flow measurement sensor, the Permittee shall compute 1-hour averages from four or more data points equally spaced over each 1-hour period. Data recorded during periods of continuous system breakdown, repair, calibration checks, and zero and span adjustments shall not be included in the data averages. The data may be recorded in reduced or nonreduced form.

[A.A.C R18-2-306.A.3.d and 306.A.4.a]

k. The SO_2 CEMS shall meet the requirements of 40 CFR Part 60 Appendix F, "Procedure 1".

[40 CFR 60.13(a)]

l. The flow measurement sensor shall meet the requirements of 40 CFR Part 60 Appendix F, "Procedure 1".

[A.A.C R18-2-306.A.3.d]

m. The pollutant gas used to prepare calibration gas mixtures under Performance Specification 2 and for calibration checks under 40 CFR 60.13(d), shall be sulfur dioxide. Method 8 shall be used for conducting monitoring system performance evaluations under 40 CFR 60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used.

[40 CFR 60.84(a)]

n. Within 60 days of the performance evaluation required in Condition XIII.B.4.e, the Permittee shall furnish the Director two copies, or more upon request, of a written report of the results.

[40 CFR 60.13(c)(2)]

o. The Permittee shall establish a conversion factor for the purpose of converting monitoring data into units of the standard in Condition XIII.B.1.a (lb/ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g. the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour

period as follows:

CF = k[(1.000-0.015r)/(r-s)]

Where:

CF = conversion factor (lb/ton per ppm)

k = constant derived from material balance. For determining k in English units, k = 0.1306.

r = percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Director's approval.

s = percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required in Condition XIII.B.3.a.

[40 CFR 60.84(b)]

p. The Permittee shall record all conversion factors and values required under Condition XIII.B.3.o.

[40 CFR 60.84(c)]

q. For the purpose of reports under 40 CFR 60.7(c), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the standard in Condition XIII.B.1.a.

[40 CFR 60.84(e)]

r. For purposes of demonstrating compliance with Condition XIII.B.1.b, the Permittee shall utilize the data from the SO_2 CEMS in conjunction with the flow measurement sensor to calculate SO_2 emissions in units of pounds per hour (lb/hr). At the end of each hour the Permittee shall calculate and record the hourly average SO_2 emission rate based on the previous 24 hours.

[A.A.C. R18-2-306.A.3.c and 306.A.4.a]

s. Alternative SO_2 Continuous Monitoring Approach

Alternatively, the Permittee may use the following continuous emission monitoring approach and calculation procedures in determining SO_2 emission rates in terms of the standard in Condition XIII.B.1.a (lb/ton). *If the Permittee chooses this option, continuous emission monitoring systems for measuring SO_2, O_2 and CO_2 shall be installed, calibrated, maintained and operated by the Permittee and subjected to the certification procedures in Performance Specifications 2 and 3.* All monitoring, recordkeeping, reporting and testing conditions which apply to the standard monitoring approach shall apply to the alternative

approach. In addition to all SO_2 CEMS requirements applicable to the primary approach, the alternative approach shall also be subject to equivalent O_2 and CO_2 CEMS requirements. The calibration procedure and span value for the SO_2 monitor shall be as specified in Condition XIII.B.3.m. The span value for CO_2 (if required) shall be 10 percent and for O_2 shall be 20.9 percent (air). A conversion factor based on process rate data is not necessary. Calculate the SO_2 emission rate as follows:

$E_S = (C_S S)/[0.265-(0.126\%O_2)-(A\%CO_2)]$

Where:

E_S = emission rate of SO_2, lb/ton of 100 percent H_2SO_4 produced.

C_S = concentration of SO_2, lb/dscf.

S = acid production rate factor, 11,800 dscf/ton of 100 percent H_2SO_4 produced.

$\%O_2$ = oxygen concentration, percent dry basis.

A = 0.0196 for propane, 0 for no fuel (auxiliary fuel factor).

$\%CO_2$ = carbon dioxide concentration, percent dry basis.

[40 CFR 60.84(d), A.A.C. R18-2-306.A.3.c and 331.A.3.c]

t. The Permittee shall log and notify ADEQ whenever a change is made between the standard and alternative SO_2 continuous monitoring approach contained in Condition XIII.B.3.s.

[A.A.C. R18-2-306.A.4.a and 306.A.5.]

4. Testing Requirements

a. Within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of the facility, the Permittee shall demonstrate initial compliance with the sulfur dioxide standard in Condition XIII.B.1.a by conducting a performance test as outlined in Condition XIII.B.4.c., below. The performance test shall be conducted once per year thereafter.

[40 CFR 60.8(a) and 60.85(b)]

b. Within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of the facility, the Permittee shall demonstrate compliance with the sulfur dioxide standards in Condition XIII.B.1.b by conducting a Method 8 performance test. The performance test shall be conducted once per year thereafter.

[A.A.C. R18-2-306.A.3.c]

c. The Permittee shall determine compliance with the SO_2 emission standards in Conditions XIII.B.1.a as follows:

(1) The emission rate (E) of SO_2 shall be computed for each run using the following equation:

$E = (CQ_{SD})/(PK)$

Where:

E = emission rate of SO_2 (lb/ton) of 100 percent H_2SO_4 produced.

C = concentration of SO_2 (lb/dscf).

Q_{SD} = volumetric flow rate of the effluent gas (dscf/hr).

P = production rate of 100 percent H_2SO_4 (ton/hr).

K = conversion factor (1.0 lb/lb).

[40 CFR 60.85(b)(1)]

(2) Method 8 shall be used to determine the SO_2 concentrations (C's) and the volumetric flow rate (Q_{SD}) of the effluent gas. The moisture content may be considered to be zero. The sampling time and sample volume for each run shall be at least 60 minutes and 40.6 dscf.

[40 CFR 60.85(b)(2)]

(3) Suitable methods shall be used to determine the production rate (P) of 100 percent H_2SO_4 for each run. Material balance over the production system shall be used to confirm the production rate.

[40 CFR 60.85(b)(3)]

d. The Permittee may use the following as alternatives to the reference methods and procedures specified above.

(1) The integrated technique of Method 3 is used to determine the O_2 concentration and, if required, CO_2 concentration.

(2) The SO_2 emission rate is calculated as described in Condition XIII.B.3.s.

[A.A.C. R18-2-306.A.3.c and 40 CFR 60.85(c)]

e. Within 30 days of the initial performance test required in Condition XIII.B.4.a the Permittee shall conduct a performance evaluation of the SO_2 CEMS in accordance with 40 CFR 60, Appendix B, "Performance Specification 2". The test shall be conducted once per year thereafter.

[40 CFR 60.13(c)(2)]

f. Within 30 days of the initial performance test required in Condition XIII.B.4.a the Permittee shall conduct a performance evaluation of the flow measurement sensor in accordance with 40 CFR 60, Appendix B, "Performance Specification 6". The test shall be conducted once per year thereafter.

[A.A.C. R18-2-306.A.3.c]

5. Permit Shield

Compliance with this Section shall be deemed compliance with 40 CFR 60.8(a), 60.13(a), 60.13(b), 60.13(c)(2), 60.13(e), 60.13(h), 60.82(a), 60.84(a)-(e), 60.85(b)(1)-(3), and 60.85(c).

[A.A.C. R18-2-325]

C. Acid Mist

1. Emission Limitations and Standards

The Permittee shall not cause to be discharged into the atmosphere from the acid plant any gases which contain sulfuric acid mist in excess of 0.15 lb per ton of acid produced, the production being expressed as 100 percent sulfuric acid

[40 CFR 60.83(a)(1)]

2. Testing Requirements

a. Within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of the facility, the Permittee shall demonstrate initial compliance with the sulfuric acid mist standards in Condition XIII.C.1. by conducting a performance test as outlined below. The performance test shall be conducted once per year thereafter.

[A.A.C. R18-2-306.A.3.c, 40 CFR 60.8(a) and 60.85(b)]

b. The Permittee shall determine compliance with the sulfuric acid mist emission standards in Condition XIII.C.1 above as follows:

(1) The emission rate (E) of sulfuric acid mist shall be computed for each run using the following equation:

$E = (CQ_{SD})/(PK)$

Where:

E = emission rate of sulfuric acid mist (lb/ton) of 100 percent H_2SO_4 produced.

C = concentration of sulfuric acid mist (lb/dscf).

Q_{SD} = volumetric flow rate of the effluent gas (dscf/hr).

P = production rate of 100 percent H_2SO_4 (ton/hr).

K = conversion factor (1.0 lb/lb).

[40 CFR 60.85(b)(1)]

(2) Method 8 shall be used to determine the sulfuric acid mist concentrations (C's) and the volumetric flow rate (Q_{SD}) of the effluent gas. The moisture content may be considered to be zero. The sampling time and sample volume for each run shall be at least 60 minutes and 40.6 dscf.

[40 CFR 60.85(b)(2)]

(3) Suitable methods shall be used to determine the production rate (P) of 100 percent H_2SO_4 for each run. Material balance over the production system shall be used to confirm the production rate.

[40 CFR 60.85(b)(3)]

c. The Permittee may use the following as alternatives to the reference methods and procedures specified above.

(1) The integrated technique of Method 3 is used to determine the O_2 concentration and, if required, CO_2 concentration.

(2) The acid mist emission rate is calculated as described in Condition XIII.B.3.s, substituting the acid mist concentration for C_s as appropriate.

[40 CFR 60.85(c)(1)(i)-(ii)]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.8(a), 60.83(a)(1), 60.85(b)(1)-(3), and 60.85(c)(1)(i)-(ii)

[A.A.C. R18-2-325]

D. Opacity

1. Emission Limitations and Standards

a. *The Permittee shall not cause to be discharged into the atmosphere from the acid plant any gases which exhibit 10 percent opacity or greater.*

[40 CFR 60.83(a)(2) and A.A.C.R18-2-331.A.3.f]
[Material permit conditions are indicated by underline and italics]

b. The opacity limit above shall not apply during periods of startup, shutdown and malfunction.

[40 CFR 60.11(c)]

2. Monitoring, Reporting and Recordkeeping Requirements

a. Baseline Establishment

The Permittee shall use the results of the Method 9 performance test required by Condition XIII.D.3 to establish a baseline opacity level for the acid plant. Within 30 days of establishing the baseline opacity, the Permittee shall report the results to the Director.

[A.A.C. R18-2-306.A.3.c and 306.A.5]

b. Baseline Reestablishment

If necessitated by the results of the bi-weekly monitoring, the Permittee may re-establish the baseline opacity level. Re-establishment of the baseline shall be performed utilizing the same procedures used in setting up the initial baseline level. Within 30 days of re-establishing the baseline opacity, the Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline.

[A.A.C. R18-2-306.A.3.c and 306.A.5]

c. A certified EPA Reference Method 9 observer shall conduct a bi-weekly survey of visible emissions emanating from the acid plant. The Permittee shall keep a record of the name of the observer, location of observer, date and time of survey, and the results of the survey.

[A.A.C. R18-2-306.A.3.c and 306.A.4.a]

(1) If the observer sees a plume from the acid plant stack that on an instantaneous basis appears to exceed the baseline opacity level, then the observer shall take a six-minute Method 9 observation of the plume. If visibility or other conditions prevent the observation, then the observer shall document these conditions.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(2) If the six-minute opacity of the plume is less than the baseline level, the observer shall make a record of the results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(3) If the six-minute opacity of the plume exceeds the baseline level but is less than the applicable opacity standard of 10%, the Permittee shall adjust or repair the controls or process equipment as practicable to reduce opacity to the baseline level. The Permittee shall make a record of the results of the Method 9 observation and the corrective action taken.

[A.A.C. R18-2-306.A.3.c and 306.A.4]

(4) If the six-minute opacity of the plume exceeds the applicable opacity standard of 10%, the Permittee shall adjust or repair the

controls or process equipment as necessary to reduce opacity to below the standard and as practicable to reduce opacity to the baseline level. The Permittee shall report the incident as an excess emission for opacity. The Permittee shall make a record of the results of the Method 9 observation, the corrective action taken, and the excess emission report.

[A.A.C. R18-2-306.A.3.c, 306.A.4 and 306.A.5]

3. Testing Requirements

For the purpose of demonstrating initial compliance with the opacity standard in Condition XIII.D.1.a., a Method 9 observation shall be conducted concurrently with the initial performance test required in Condition XIII.C.2.a, except as allowed in 40 CFR 60.11(e)(1). The minimum total time of observations shall be 3 hours (thirty (30) 6-minute averages). The performance test shall be conducted once per year thereafter.

[A.A.C. R18-2-306.A.3.c, 40 CFR 60.11(b), (e)(1) and 60.85(b)(4)]

4. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.11(b), 60.11(c), 60.11(e)(1), 60.83(a)(2), and 60.85(b)(4).

[A.A.C. R18-2-325]

E. Nitrogen Oxides

1. Emission Limitations and Standards

The Permittee shall not cause to be discharged into the atmosphere from the acid plant nitrogen oxides in excess of 10.0 lbs per hour.

[A.A.C. R18-2-306.01 and331.A.3.a]

[Material permit conditions are indicated by underline and italics]

2. Testing Requirements

Within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of the facility, the Permittee shall demonstrate initial compliance with the nitrogen oxides standards in Condition XIII.E.1 by conducting a Method 7 performance test. The performance test shall be conducted once per year thereafter.

[A.A.C. R18-2-306.A.3.c]

Condition XIV in Attachment "B" shall be added as follows:

XIV. UNCLASSIFIED SOURCES

A. Applicability

This section applies to the Sulfur Furnace Pre-Heater Burner (S-600) and the Cooling Towers (CT-201, CT-202)

B. Operating Limitations

1. *The Permittee shall burn only propane in the Sulfur Furnace Pre-Heater Burner.*
[A.A.C. R18-2-306.01 and331.A.3.a]
[Material permit conditions are indicated by underline and italics]

2. *The Permittee shall only operate the Sulfur Furnace Pre-Heater Burner for the purposes of acid plant startups and shutdowns, maintenance or testing.*
[A.A.C. R18-2-306.01 and331.A.3.a]
[Material permit conditions are indicated by underline and italics]

3. Materials including solvents or other volatile compounds, acids and alkalis shall be processed, stored, used and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, the installation and use of such control methods, devices or other equipment shall be mandatory.
[A.A.C. R18-2-730.F]

4. Where a stack, vent or other outlet is at such a level that fumes, gas mist, odor, smoke, vapor or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent or other outlet by the Permittee to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to adjoining property.
[A.A.C. R18-2-730.G]

5. Permit Shield

   Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-730.F and 730.G.
[A.A.C. R18-2-325]

C. Particulate Matter

1. The Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in excess of the amounts calculated by one of the following equations:

   a. For process sources having a process weight rate of 30 tons per hour or less, the maximum allowable emissions shall be determined by the following equation:

      $E = 4.1P^{0.67}$

      Where:

      E = the maximum allowable particulate emissions rate in pounds-

mass per hour.

P = the process weight rate in tons-mass per hour.

[A.A.C. R18-2-730.A.1.a]

b. For process sources having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$E = 55.0P^{0.11} - 40$

Where "E" and "P" are defined as indicated in Paragraph "b" of this subsection.

[A.A.C. R18-2-730.A.1.b]

c. When applying the process weight rate equation, the Permittee shall utilize the total process weight from all similar units employing a similar type process to determine the maximum allowable emissions of particulate matter.

[A.A.C. R18-2-730.B]

2. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-730.A.1.a, 730.A.1.b and 730.B.

[A.A.C. R18-2-325]

D. Opacity

1. Emission Limitations

The Permittee shall not cause or allow to be discharged into the atmosphere, from any plume or effluent, visible emissions in excess of 20 percent, as determined by EPA Reference Method 9. Where the presence of uncombined water is the only reason for the exceedances of any visible emissions requirement, such exceedances shall not constitute a violation.

[A.A.C. R18-2-702.B and A.A.C. R18-2-702.C]

2. Monitoring, Recordkeeping and Reporting Requirements

A certified EPA Reference Method 9 observer shall conduct a quarterly survey of visible emissions emanating from the cooling towers and biweekly surveys of visible emissions emanating from the sulfur furnace pre- heater burner when in operation. If visibility or other conditions prevent the observation, then the observer shall document these conditions. If the opacity of the emissions observed appears to exceed the standard, the observer shall conduct a certified EPA Reference Method 9 observation. The Permittee shall keep records of the initial survey and any EPA Reference Method 9 observations performed. These records shall include the emission point observed, location of observer, name of

observer, date and time of observation, and the results of the observation. If the observation shows a Method 9 opacity reading in excess of 20 percent, the Permittee shall report this to ADEQ as excess emission and initiate appropriate corrective action to reduce the opacity below 20 percent. The Permittee shall keep a record of the corrective action performed.

[A.A.C. R18-2-306.A.3.c, 306A.4.a, and 306.A.5]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-702.B and C.

[A.A.C. R18-2-325]

E. Nitrogen Oxides

1. Emission Limitation/Standard

The Permittee shall not cause, allow or permit the discharge of nitrogen oxides, from the stack of the Sulfur Furnace Pre Heater Burner, into the atmosphere in excess of 500 parts per million.

[A.A.C. R18-2-730.A.3]

2. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-730.A.3.

[A.A.C. R18-2-325]

F. Sulfur Dioxide

1. Emission Limitation/Standard

The Permittee shall not cause, allow or permit the discharge of sulfur dioxide, from the stack of the Sulfur Furnace Pre Heater Burner, into the atmosphere in excess of 600 parts per million.

[A.A.C. R18-2-730.A.2]

2. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C.R18-2-730.A.2. [A.A.C. R18-2-325]

ATTACHMENT "C"

EQUIPMENT LIST

Addenda (Significant Revision #46747) to Operating Permit #38109 for Freeport - McMoRan Safford Inc.

The following table shall replace the equipment list, Attachment "C" of Operating Permit #38109.

Equipment	NSPS	Nominal Capacity	Make	Model	Equipment ID Number	Date of Manufacture
Primary Crushing						
12” Scalping Grizzly	LL	3,400 tph	PDSI	34’6” x 26’6”	2110-GRI 001 Custom Fabricated	2007
12” Scalping Grizzly	LL	3,400 tph	PDSI	34’6” x 26’6”	2110-GRI 002 Custom Fabricated	2007
900-ton Undersize Surge Bin	LL	3,400 tph	PDSI	NA	2110-BIN 001 Custom Fabricated	2007
900-ton Undersize Surge Bin	LL	3,400 tph	PDSI	NA	2110-BIN 002 Custom Fabricated	2007
365-ton Oversize Surge Bin	LL	3,400 tph	PDSI	NA	2110-BIN 003 Custom Fabricated	2007
Vibrating Grizzly Feeder	LL	2,700 tph	Metso	VL14	2110-GRI 003	2007
48” x 60” Jaw Crusher	LL	1,150 tph	Metso	C160	2110-CRJ 001	2006
72” Grizzly Undersize Apron Feeder	LL	3,400 tph	Metso	AF10-72MN-25.96-125HP	2110-FDR 001	2006
72” Grizzly Undersize Apron Feeder	LL	3,400 tph	Metso	AF10-72MN-25.96-125HP	2110-FDR 002	2006
60” Primary Crushing Discharge Conveyor	None	7,650 tph	PDSI	CV60” x 1414 ft.	2120-CON 001 Custom Fabricated	2007
Dust Collector (Baghouse)	LL	25,000 CFM	Filter Technology LTD	288R-10 TR WI	2110-BAG 001	2006
Coarse Ore Stockpile						
72” Coarse Ore Reclaim Apron Feeder	LL	3,400 tph	Metso	AF10-72MN-41-200HP	2130-FDR 001	2006
72” Coarse Ore Reclaim Apron Feeder	LL	3,400 tph	Metso	AF10-72MN-41-200HP	2130-FDR 002	2006
72” Coarse Ore Reclaim Apron Feeder	LL	3,400 tph	Metso	AF10-72MN-41-200HP	2130-FDR 003	2006

Equipment	NSPS	Nominal Capacity	Make	Model	Equipment ID Number	Date of Manufacture
60” Coarse Ore Reclaim Conveyor	LL	6,800 tph	PDSI	CV60” x 1034 ft.	2140-CON 001 Custom Fabricated	2007
Secondary Crushing and Screening						
585-ton Secondary Screen Surge Bin	LL	6,800 tph	PDSI	NA	2230-BIN 001 Custom Fabricated	2007
72” Secondary Screen Belt Feeder	LL	3,400 tph	IEM-BF	V616-72-425-BF	2230-FDR 001	2006
72” Secondary Screen Belt Feeder	LL	3,400 tph	IEM-BF	V616-72-425-BF	2230-FDR 002	2006
12’ x 27’ Secondary Double Deck Banana Screen	LL	3,400 tph	Metso	Nordberg LM 911	2230-SCN 001	2007
12’ x 27’ Secondary Double Deck Banana Screen	LL	3,400 tph	Metso	Nordberg LM 911	2230-SCN 002	2007
60” Secondary Crushing Plant Feed Conveyor	LL	5,000 tph	PDSI	CV60” x 871 ft.	2240-CON 001 Custom Fabricated	2007
3000-ton Secondary Crushing Surge Bin	LL	2,500 tph	PDSI	NA	2210-BIN 001 Custom Fabricated	2007
72” Secondary Crusher Belt Feeder	LL	2,500 tph	IEM-BF	V615-72" x 57'-00'-BF	2210-FDR 001	2006
72” Secondary Crusher Belt Feeder	LL	2,500 tph	IEM-BF	V615-72" x 57'-00'-BF	2210-FDR 002	2006
MP 1000 STD Secondary Crusher	LL	2,500 tph	Metso	MP1000	2210-CRU 001	2006
MP 1000 STD Secondary Crusher	LL	2,500 tph	Metso	MP1000	2210-CRU 002	2006
60” Secondary Crushing Discharge Conveyor	LL	5,000 tph	PDSI	CV60” x 817 ft.	2220-CON 001 Custom Fabricated	2007
72” Secondary Crushing Transfer Conveyor	LL	5,000 tph	PDSI	CV72” x 50 ft.	2220-CON 002 Custom Fabricated	2007
Dust Collector (Baghouse)	LL	47,000 CFM	Filter Technology LTD	544R-10 TR WI	2210-BAG 003	2006
Dust Collector (Baghouse)	LL	21,000 CFM	Filter Technology LTD	240R-10 TR WI	2210-BAG 001	2006
Tertiary Crushing and Screening						
Tertiary Crushing Plant Feed Conveyor	LL	6,800 tph	PDSI	CV60” x 1031 ft.	2260-CON 001 Custom Fabricated	2007
Tertiary Tripper	LL	6,800 tph	Conveyor Engineering	60662-101	2260-TRP 001	2006
4,400 ton Tertiary Crushing Surge Bin	LL	7,400 tph	PDSI	NA	2270-BIN 001 Custom Fabricated	2007

Equipment	NSPS	Nominal Capacity	Make	Model	Equipment ID Number	Date of Manufacture
72” Tertiary Crusher Belt Feeder	LL	1,850 tph	IEM-BF	V617-72-436-BF	2270-FDR 001	2006
72” Tertiary Crusher Belt Feeder	LL	1,850 tph	IEM-BF	V617-72-436-BF	2270-FDR 002	2006
72” Tertiary Crusher Belt Feeder	LL	1,850 tph	IEM-BF	V617-72-436-BF	2270-FDR 003	2006
72” Tertiary Crusher Belt Feeder	LL	1,850 tph	IEM-BF	V617-72-436-BF	2270-FDR 004	2006
12’ X 27’ Tertiary Single Deck Banana Screen	LL	1,850 tph	Metso	Nordberg LM 911	2270-SCN 001	2007
12’ X 27’ Tertiary Single Deck Banana Screen	LL	1,850 tph	Metso	Nordberg LM 911	2270-SCN 002	2007
12’ X 27’ Tertiary Single Deck Banana Screen	LL	1,850 tph	Metso	Nordberg LM 911	2270-SCN 003	2007
12’ X 27’ Tertiary Single Deck Banana Screen	LL	1,850 tph	Metso	Nordberg LM 911	2270-SCN 004	2007
MP 1000 S.H. Tertiary Crusher	LL	800 tph	Metso	MP1000	2270-CRU 001	2006
MP 1000 S.H. Tertiary Crusher	LL	800 tph	Metso	MP1000	2270-CRU 002	2007
MP 1000 S.H. Tertiary Crusher	LL	800 tph	Metso	MP1000	2270-CRU 003	2007
MP 1000 S.H. Tertiary Crusher	LL	800 tph	Metso	MP1000	2270-CRU 004	2007
60” Tertiary Screening Reclaim Conveyor	LL	5,000 tph	PDSI	CV60” x 231 ft.	2270-CON 001 Custom Fabricated	2007
72” Tertiary Screening Transfer Conveyor	LL	5,000 tph	PDSI	CV72” x 30 ft.	2270-CON 002 Custom Fabricated	2007
60” Fine Ore Product Conveyor	LL	6,800 tph	PDSI	CV60” x 586 ft.	2280-CON 001 Custom Fabricated	2007
Dust Collector (Baghouse)	LL	14,000 CFM	Filter Technology LTD	169R-10 TR WI	2210-BAG 004	2006
Dust Collector (Baghouse)	LL	72,000 CFM	Filter Technology LTD	832R-10 TR WI	2210-BAG 002	2006
Dust Collector (Baghouse)	LL	6,000 CFM	Filter Technology LTD	72-10 TR WI	2280-BAG 001	2006
Fine Ore and Agglomeration Handling						
60” Fine Ore Bin Feed Conveyor	LL	6,800 tph	PDSI	CV60” x 355 ft.	2280-CON 002 Custom Fabricated	2007

Equipment	NSPS	Nominal Capacity	Make	Model	Equipment ID Number	Date of Manufacture
8,100–ton Fine Ore Surge Bin	LL	6,800 tph	PDSI	NA	2310-BIN 001 Custom Fabricated	2007
72” Agglomeration Drum Feeder	LL	3,900 tph	IEM	V618-72-60-DF	2310-FDR 001	2006
72” Agglomeration Drum Feeder	LL	3,900 tph	IEM	V618-72-60-DF	2310-FDR 002	2006
60” Agglomeration Feed Conveyor	LL	3,900 tph	PDSI	CV60” x 156 ft.	2320-CON 001 Custom Fabricated	2007
60” Agglomeration Feed Conveyor	LL	3,900 tph	PDSI	CV60” x 156 ft.	2320-CON 002 Custom Fabricated	2007
15’ x 45’ Agglomeration Drum	None	3,400 tph	Feeco	15’ x 45’	2340-AGG 001	2006
15’ x 45’ Agglomeration Drum	None	3,400 tph	Feeco	15’ x 45’	2340-AGG 002	2006
Bin Vent Dust Collector (Baghouse)	LL	6,000 CFM	Filter Technology LTD	72R-10 TR WI	2310-BAG 002	2006
Dust Collector (Baghouse)	LL	20,000 CFM	Filter Technology LTD	240R-10 TR WI	2310-BAG 001	2006
Agglomeration Discharge and Heap Leach Conveyors						
72” Agglomeration Discharge Conveyor	LL	6,800 tph	PDSI	CV72” x 379’	2350-CON 001 Custom Fabricated	2007
60” Overland Conveyor	LL	6,800 tph	PDSI	CV60” x 7808 ft.	2360-CON 001 Custom Fabricated	2007
60” Tire Mounted Mobile Tripper	LL	6,800 tph	PDSI	CV60” x 70’. Overland Convey	2360-TRP 001 Custom Fabricated	2007
72” Ramp Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2410-CON 001 Custom Fabricated	2007
72” Ramp Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2410-CON 002 Custom Fabricated	2007
72” Ramp Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2410-CON 003 Custom Fabricated	2007
72” Ramp Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2410-CON 004 Custom Fabricated	2007
72” Ramp Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2410-CON 005 Custom Fabricated	2007
72” Ramp Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2410-CON 006 Custom Fabricated	2007
72” Super Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2420-CON 001 Custom Fabricated	2007
72” Super Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2420-CON 002 Custom Fabricated	2007
72” Super Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2420-CON 003 Custom Fabricated	2007

Equipment	NSPS	Nominal Capacity	Make	Model	Equipment ID Number	Date of Manufacture
72” Super Portable Conveyor	LL	6,800 tph	PDSI	CV72” x 250 ft.	2420-CON 004 Custom Fabricated	2007
72” Horizontal Feed Conveyor	LL	6,800 tph	PDSI	CV72” x 108 ft.	2430-CON 001 Custom Fabricated	2007
72” Horizontal Conveyor	LL	6,800 tph	PDSI	CV72” x 277 ft.	2440-CON 001 Custom Fabricated	2007
72” Radial Stacker	LL	6,800 tph	TNT	72” x 194’to220’	2450-STA 001	2007
Electrowinning Equipment						
Electrowinning Tankhouse	None	125,000 tpy	PDSI	Custom Fabricated	EWTANK Custom Fabricated	2007
Propane Hot Water Heater	None	9.7 MMBtu/hr	Cleaver-Brooks	CB(LE)	1-4220-HEX-010	2007
Propane Hot Water Heater	None	9.7 MMBtu/hr	Cleaver-Brooks	CB(LE)	1-4220-HEX-011	2007
Auxiliary Equipment						
Emergency Generator for Raffinate Pump	IIII	1,500 kW	Caterpillar	3512C	3310-GEN 001	2007
Emergency Generator for Raffinate Pump	IIII	1,500 kW	Caterpillar	3512C	3310-GEN 002	2007
Emergency Generator for South Raffinate Pump	IIII	1,500 kW	Caterpillar	3512C	3310-GEN 003	2007
Emergency Generator for South Raffinate Pump	IIII	1,500 kW	Caterpillar	3512C	3310-GEN 004	2007
Fire Water Pump	IIII	149 hp	Cummins	CFP59-F20	8310-PMP 008	2007
Fire Water Pump	IIII	288 hp	Cummins	CFP83-F40	8310-PMP 011	2007
Acid Plant						
Sulfur Furnace Propane Pre-Heater Burner	None	68.4 MMBtu/hr	TBD	TBD	S-600	TBD
Sulfur Furnace Propane Startup Boiler	None	5.23 MMBtu/hr	TBD	TBD	B-600	TBD
Sulfuric Acid Plant	H	1350 tpd	MECS	TBD	TBD	TBD
Acid Plant Cooling Tower	None	28,500 gpm	TBD	TBD	CT-201	TBD
Caustic Scrubber	H	60,000 scfm Process Gas	MECS	NA	SC-9000	TBD